ANNEX A

RATIONALE
INTELLIGENCE AND ELECTRONIC WARFARE TACTICAL PROFICIENCY TRAINER
(IEWTPT)

The purpose of this annex is to support the Essential Characteristics listed in paragraph 4 of the Operational Requirements Document (ORD), Version 4.1, for the Intelligence and Electronic Warfare Tactical Proficiency Trainer (IEWTPT).

4. Capabilities Required.

a. System Performance. The two components of IEWTPT--TSA and TCC will be discussed below.

(1) TSA Functional Requirements.

(a) The TSA will be an embedded/integral part of the operational IEW system or attached to stimulate IEW collection assets.

RATIONALE. The TSA is the embedded or integral component of the IEWTPT, which will provide the stimulation to make the IEW collection asset function as if collecting real/live target data.

(b) The TSA will support the training of the different MI disciplines. It will operate as the individual trainer of the mission-related functions required by a specific piece of IEW equipment or collection asset.

RATIONALE. The IEWTPT must be capable of stimulating the equipment it is supporting without having to rely on any external devices when performing individual training. When using IEWTPT, it should seem transparent to the soldier that a simulation is driving the equipment.

(c) The TSA will support training in Garrison and Field environments (i.e., Motor Pool, Battle Simulation Center, CPX, FTX, etc.).

RATIONALE. As an embedded trainer the TSA must be able to support training of individual crews and operators in Garrison and Field environments (i.e., Motor Pool, Battle Simulation Center, CPX, FTX, etc.). This may only be proficiency training at the individual crews and operators levels but it is critical to sustain and enhance these skills to ensure competence on the operational IEW system.

(d) TSA will be self-contained for individual training, but capable of supporting doctrinal linkages to other IEW machines in support of collective training.

RATIONALE. This is required to exercise and evaluate a units' ability to accomplish the difficult collective task of data linking collection assets against priority enemy targets

(e) The TSA will receive TCC feeds replicating the stimuli it would receive in wartime.

RATIONALE. This allows the expansion of training from just operator and crew to units and inputs into the battle staff and battle command.

(f) The TSA must respond to operator actions consistent with normal IEW operating parameters. For example, IEW Common Sensor (IEWCS) electronic attack actions; Counterintelligence (CI) Human Intelligence (HUMINT) Automation Tool Set (CHATS) request for information; CGS request for spot coverage.

RATIONALE. This provides the realism to the operator and the over all exercise actions that makes this a more complete trainer for the IEW BFA and the battle command training.

(g) The TSA will use interactive and pre-recorded scenarios to provide a realistic battlefield environment, to include foreign language input, as seen by the IEW asset. The scenarios will be hosted on a media with a minimum play length of 24 hours. The operator should be able to quickly change the scenario media and return to operation in a target time of 3 minutes, and a maximum time of 10 minutes.

RATIONALE. This will provide operator/crews, commanders and their staffs the opportunity to conduct collective training in a realistic time frame and battlefield environment. With the entire element working to solve the same problem/scenario, all aspects of the MI unit's mission will be exercised and evaluated.

(h) The TSA will provide simulated networking of IEW assets in order to perform direction finding (DF) missions.

RATIONALE. This will exercise and evaluate a units' ability to accomplish the difficult collective task of data linking collection assets against priority enemy targets.

(i) The TSA will provide a post-exercise audit of IEW operator performance to the TCC, using either removable media or by direct electronic means.

RATIONALE. Commanders at all echelons have a stated requirement to evaluate their units' training readiness and how that units' readiness compares with other like units. This evaluation will help redirect future training efforts to focus on weaknesses discovered.

(j) The TSA will communicate with the TCC to synchronize scenario events and reflect IEW asset operations.

RATIONALE. This will allow the scenarios to be adjusted to provide the realism of a fluid battlefield

(k) The TSA must be capable of being powered by tactical or local commercial power. The TSA must be able to withstand voltage and frequency fluctuations and temporary power losses within the limits of the host system.

RATIONALE. The TSA will be used in a field environment as well as in garrison. Therefore, it must be able to operate on the electrical power that is available to the MI unit in the field. In order to enhance the flexibility of the TSA, it is desirable that the TSA also accept base commercial power when being used in garrison. Again, impact on maintenance personnel within the MI unit must be seriously considered.

(l) The TSA must be within the weight constraints of the IEW asset it is supporting.

RATIONALE. This is to ensure the IEW asset is deployable without extreme maintenance procedures being performed due to the TSA.

(m) The TSA must be able to use HLA compliant and or DIS compatible simulations/scenarios/data.

RATIONALE. The constructive simulations such as WARSIM 2000, WIM and other will be HLA compliant or compatible and the TSA must be able to use these for stimulation of the IEW asset.

(n) The TSA must be able to use classified data from a simulation/scenarios up to and including the TOP SECRET (TS) Sensitive Compartmented Information (SCI) level.

RATIONALE. Some TSAs will use classified scenarios up to the TS SCI level.

(o) At a minimum, the TSA will interface with the following tactical systems (listed in priority) and all product improvements to these systems:

Joint Surveillance and Target Attack Radar System (JSTARS) Target Acquisition Subsystems: Common Ground Station (AN/TSQ-179(V)1)

Joint Tactical Unmanned Aerial Vehicle (JUAV), includes the Tactical Control Station (TCS) which has commonality with tactical UAVs including HUNTER (BQM-155A) and OUTRIDER (and with other joint tactical UAVs such as PIONEER and PREDATOR)

GUARDRAIL Common Sensor (Integrated Processing Facility (IPF))
- System 2 (AN/USD-9E)
- System 1 (AN/USD-9C)
- System 4 (AN/USD-9B)
- System 3 (AN/USD-9D)

IEW Common Sensor (IEWCS)
- Ground Based Common Sensor-Light (AN/MLQ-38)
- Advanced QUICKFIX (AN/ALQ-151(V)3)

TRAILBLAZER (AN/TRQ-138)

Improved Remotely Monitored Battlefield Sensor System (IREMBASS (AN/PSQ-7))

Tactical Exploitation System (TES), and Division Tactical Exploitation System (DTES)

Counterintelligence (CI) Human Intelligence (HUMINT) Automation Tool Set (CHATS) (AN/PYQ-3(V))

Aerial Common Sensor (ACS)

Airborne Reconnaissance Low-Multipurpose (ARL-M)

RATIONALE. The specific tactical systems listed represent existing or emerging systems, which are projected to be in the Army inventory upon IEWTPT fielding.

(2) The TCC Functional Requirement.

(a) The TCC will network with current and planned constructive simulation environment (e.g. WARSIM 2000, WIM, TACSIM, JANUS, CBS, etc.) and include the capability to store and replay constructive simulation vignettes.

RATIONALE. Without a scenario to drive training all realism and cohesiveness would be lost. Evaluation of asset operators and units could not be accomplished. Live interactive scenario play may not be possible or available at all training events, and therefore a digitally recorded scenarios is also required.

(b) The TCC will have the capability to net the TSAs for collective and unit training.

RATIONALE. This is essential to exercise and evaluate a units ability to accomplish the difficult collective task of data linking collections assets against priority enemy targets

(c) The TCC will support training in Garrison and Field environment (i.e., Motor Pool, Battle Simulation Center, CPX, FTX, etc.).

RATIONALE. The TCC is required to provide a training environment at homestation (Ft. Hood, Ft. Bragg, Ft. Huachuca) and a field environment (NTC, JRTC, CMTC). As such it must be adaptable to both these environments.

(d) The TCC will synchronize up to 90 TSAs in a common scenario, in support of a typical wartime configured Corps.

RATIONALE. A typical wartime configured Corps has 3 to 5 Divisions assigned plus it's organic MI Brigade. The number of MI systems typically supporting a Corps are, one IPF (GRCS), six TES, and six CGS plus an ARL-M. Each Division will usually have 18 CGS, 5 I-REMBASS, one TES, four AQF, six GBCS-L, and a number of TCS and CHATS. The organic Corps MI systems along with three Divisions worth of MI systems equates to approximately 90 plus TSAs

(e) The TCC will provide a post-exercise audit of operator performance by each IEW asset.

RATIONALE. Commanders at all echelons have a stated requirement to evaluated their units' training readiness and how that unit readiness compares with other like units. This evaluation will help redirect future training efforts to focus on weaknesses discovered.

(f) The TCC must be capable of being powered either by local commercial or electrical power organic to the MI unit.

RATIONALE. The TCC will be used in a field environment as well as garrison. Therefore, it must be able to operate on the electrical power that is available to the MI unit in the field. In order to enhance the flexibility of the TCC, it is desirable that the TCC also accept base commercial power when being used in garrison.

(g) The TCC will have a constructive scenario back-up ability for use should the constructive simulation or TCC system fail during use. It should conduct an automatic back-up every 15 minutes to a separate storage media and allow the operator to manually instruct the TCC to conduct a back-up. The TCC will have a storage capability (i.e., CD ROM) for digital replay media.

RATIONALE. This is to ensure that the data sent to the TCC can be recovered and used for evaluation without complete loss of this data if the system fails during use.

(h) The TCC must be able to use HLA compliant and/or DIS compatible simulations/scenarios/data.

RATIONALE. The constructive simulations such as WARSIM 2000, WIM and other will be HLA compliant or compatible and the TCC must be able to use these in support of the TSAs.

(i) The TCC must be able to use classified data from a simulation/scenarios up to and including the TS SCI level.

RATIONALE. All TCCs will use classified scenarios up to the TS SCI level in support of some of the TSAs.

(j) Interface from TCC to the Constructive Simulation. Constructive simulation feeds must support the precision location of scenario entities (80m) or the translation of aggregate information into entity-level scenario data.

RATIONALE. The constructive simulation may not have the fidelity required to stimulate the TSAs and therefor the TCC must provide this level of detail to the TSA.

(k) The TCC will provide TSAs with both constructive simulation feeds or, when operating separate from lager combined arms training scenario, constructive scenario vignettes sufficient to net and stimulate subordinate TSAs.

RATIONALE. This capability is required to ensure that homestation training can occur without a Warfigther simulation having to be on going. This allows the local commanders to provide collective and individual training for their units and crews.

(l) The TCC will have the ability to use existing communication networks (i.e., wide area network (WAN), local area network (LAN), etc.) for connectivity to the constructive simulation and TSAs.

RATIONALE. This is to ensure that the local communication networks are used rather that creating a separate network.

(m) TCC components and functionality will be tailorable to match the IEW capabilities of the target unit.

RATIONALE. The six locations for the TCCs will have different types and combinations of IEW collections assets and employ them somewhat differently. As such the TCC must be designed to support that operational need.

(n) TCC will interface with both the Combat Training Centers-Instrumentation System (CTC-IS) and the Homestation Instrumentation Training Systems (HITS) to support live training at these locations.

RATIONALE. The TCC capability must include provisions for Force-on-Force live, virtual and constructive interactive play to allow the Maneuver Combat Training Centers (MCTCs) and the Homestation Instrumentation Training System (HITS) to collect, analyze, and control digital Intelligence data for training exercises.

(3) Constructive Simulation Requirements. The Constructive Simulation must present information to the TCC that reflects the same content that must be presented to an Army Tactical Command and Control System (ATTCS)/Army Battle Command System (ABCS) operational equipment.

RATIONALE. This is required so that the data from the TSAs is reported, as it would be through the ATTCS or ABCS operational equipment.

b. Logistics and Readiness.

(1) Contractor logistics support (CLS) will support the TCC for IEWTPT for both hardware and software.

RATIONALE. The TCC for IEWTPT is a limited fielding (six) training device and as such CLS is the most cost effective form of support.

(2) Support of the embedded or strapped on TSA will be the responsibility of the host IEW system.

RATIONALE. The TSA will be strapped-on or embedded on the tactical IEW collection asset. As such it should just be another component of that system that the unit or organizational maintenance personnel should maintain.

(3) The TSA will be built to comply with the existing physical requirements of the IEW asset.

RATIONALE. The physical characteristics of the IEW asset, such a size or width limitations, must be taken into considerations in the design of the TSA.

(4) The system must have built-in-test (BIT) capability.

RATIONALE. This allows the operator to immediately determine component functionality without using external test equipment, and will simplify fault detection and isolation.

(5) The system will be designed for ease of maintenance and servicing with minimum personnel, materiel, parts, and special tools and equipment.

RATIONALE. Minimizes any increases in operating costs and personnel. Allows for maintenance at the lowest level to maximize system availability.

(6) The maximum time to repair for 95 percent of the maintenance actions at the unit level will not exceed 1 hour.

RATIONALE. To minimize additional logistics and support requirements. Time lines are established to ensure soldier training time is maximized.

(7) Base the procedures for each level of maintenance on a Logistics Support Analysis (LSA).

RATIONALE. The LSA will determine the proper maintenance procedures and allocations for the IEWTPT.

c. Critical System Characteristics.

(1) The TSA must operate under the same adverse weather conditions of the supported IEW asset.

RATIONALE. To maximize training time, the TSA must be capable of operating within the shelter/equipment despite the environmental conditions in which the shelter/equipment may be operating.

(2) The TSA will in no way impede the normal operation of the IEW asset when the IEWTPT/TSA is not in use.

RATIONALE. Modification of the tactical systems to be stimulated must not adversely effect the combat readiness of the equipment.

(3) The TSA and TCC will be air transportable and roll-on/roll-off by Air Force tactical airlift and all Army utility helicopters.

RATIONALE. No additional burden should be placed on an operator to get the IEW asset with the TSA installed transported to accomplish the mission.

(4) The IEWTPT will comply with applicable safety, health, and human engineering design requirements. It will not present any uncontrolled safety and health hazards to personnel throughout the life cycle of the system.

RATIONALE. The system must not present any unreasonable risk of injury during operation or maintenance.

d. Preplanned Product Improvement (P3I**).** The IEWTPT will be developed with a P3I capability. The systems listed in paragraph 4a (1)(o) above will evolve. IEWTPT must also evolve to train all MI specialties and stimulate all collection systems or processors.

RATIONALE. Once the objective IEWTPT is built, it will allow for unit training of all MI disciplines, and as the operational systems change, the IEWTPT must change to support those needs.